From: Granger, Michelle
To: Hauber, Erin M CIV USARMY CENWK (USA)
Subject: RE: Pohatcong OU3 - RAWP Addendum RTCs clarifications
Date: Thursday, October 17, 2019 3:44:00 PM

This looks great! Thank you, Erin.
When you have a moment, can you call me at 212-637-4975? I'll be leaving by 4:15pm.
Thank you!
Best,
Michelle-

From: Hauber, Erin M CIV USARMY CENWK (USA) <Erin.M.Hauber@usace.army.mil>
Sent: Thursday, October 17, 2019 11:02 AM
To: Granger, Michelle <Granger.Michelle@epa.gov>
Subject: Pohatcong OU3 - RAWP Addendum RTCs clarifications
Michelle,
Hope this doesn't arrive too late for your meeting with Jon. I'm working from home today. Feel free to call me on my cell if you'd like to talk through.
After some thought, I'm not sure we'll gain much from a call with TRS to discuss their new technology, but I have no reservations asking for a call. I'm slightly concerned it may draw their attention away from their deliverable due next week and the follow-up RA Addendum No. 2 due 11/13. They have quite a bit of ground to make up in a short time. We could plan to ask them more direct questions about their new heater in person during our kickoff call and better yet, ask them to bring a heater itself so we can see what it looks like. A few of the responses urge them to build in room for implementation uncertainties within their schedule and keep EPA in the loop.
Another thought - Jon had asked about their drilling QC procedure. We could ask them to show us their DeviFlex survey tool during the kickoff. I included the Comment/Response from the RAWP below for reference.
Thanks,
Erin
RAWP Comment #3: This project requires precision drilling, with a change in angle as small as 4° between heaters
in many clusters. How will as-built drilling conditions be verified for the angled borings with very limited access to the manufacturing area?
Response: Ramboll will verify that the angled borings are installed within an acceptable tolerance such that they do not substantially deviate from the locations/coordinates identified in the 3D EVS model and design drawings/specifications. Borehole surveying methods will be used to measure the direction and inclination of the angled boreholes, enabling the calculation of trajectory coordinates while they are being installed. The borehole surveying method will utilize a DeviFlex™ survey tool which is a non-magnetic multi-shot survey instrument that is used inside the drill string. The DeviFlex™ survey tool is not affected by magnetic disturbance and can be used in all types of rock formations, in cased boreholes and in boreholes adjacent to steel or other objects that locally alter the
earth's magnetic field. The DeviFlex™ is an electronic instrument that uses tri-axis accelerometers to measure the absolute inclination and the rotation angle of the instrument axis at any given position and strain gauge sensors to detect the deflection over the length of the instrument. The sensor data obtained during a borehole survey is stored in an internal memory within the unit and is downloaded

when the tool is retrieved.
The instrument will be deployed directly into a 2-inch inside diameter flush-threaded PVC pipe that is
temporarily placed within the angled drill casing to facilitate use of the tool with standard parts fitting
in BWL, NWL and HWL drill string. A wireline is attached to the top of the DeviFlex™ and secured to a spool for measurement of instrument depth and for safe deployment and retrieval. The survey is generally performed by placing the DeviFlex™ at a given depth. Once the instrument is installed to depth the tool will take a measurement to read and record the sensor data. Once recorded the survey
tool is raised or lowered to the next depth and a new measurement is recorded. Together with the user inserted depth value, the sensor data is processed into azimuth, inclination and borehole coordinates.
After retrieval and removal of the instrument from the borehole, a communications cable is connected
to the PDA to display and download the coordinates of the borehole measurements along with a profile
of the hole. The results are instantaneously displayed on the PDA for determination of borehole alignment. Each angled TCH well survey and profile will be evaluated with respect to the maximum established borehole deviation tolerance of 4 feet in any direction (based on the thermal model requirements).
Erin Hauber, P.E.
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